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THIS ENCLOSURE CONTAINS REVISED
TABLES FOR TABLES IV THROUGH
XV OF REFERENCE I.

TRANSMITTAL MEMO

W77-26174

CR 157434

SUBJECT: REVISED TABLES FOR DESIGN NOTE NO. 1.4-7-54.

ENCL: Revised Tables

To [NASA/LYNDON B. JOHNSON SPACE CENTER
2101 NASA ROAD I
HOUSTON, TEXAS 77058
ATTN: S. A. Kamen/FM4

TM NO.

1.4-7-496

DATE

12 SEPTEMBER 1977

CONTRACT NO.

NAS9-14960

TASK ORDER NO.

D0709

TASK ASSIGNMENT NO.

C

Use Brief Informal Language

REMARKS:

The dispersion analysis for the first orbital flight test reference flight profile (OFT-1 RFP) of Reference 1 has been revised. The following new effects are included in this revision:

- 1) revised SRB separation sequence
- 2) use of PEG mode 4 during OMS burns (Ref. 1 analysis used PEG mode 6 because of a PEG mode 4 targeting problem which existed in the then SVDS program)
- 3) inclusion of environmental gravitational effects due to J_2 throughout OMS and orbital coast phases (Ref. 1 excluded J_2 effects beginning with OMS-1 ignition)

and 4) inclusion of effects of sensed velocity during OMS-1/OMS-2 coast.

The enclosure contains revised tables for Tables IV through XV of Reference 1.

REFERENCE:

1. Design Note No. 1.4-7-54, "Updated Dispersion Analysis for the First Orbital Flight Test (OFT-1) Mission," dated 20 May 1977.

LSL/1t

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TABLE IV-A

RSS DATA AT SRB SEPARATION (EVENT)

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	WEIGHT LB	SSME PROP LB
PLATFORM ALINE										
AZIMUTH	1.	-34.	126.	-8	.005	-0	3.1	.0	0.	0.
TILT	27.	-71.	20.	-7	.014	.7	.4	.0	0.	0.
ROLL	12.	-12.	-84.	.0	.004	.3	-1.4	.0	0.	0.
DRIFT BIAS										
X	0.	-1.	2.	-0	.000	-0	.1	.0	0.	0.
Y	1.	-3.	1.	-0	.001	.1	.0	.0	0.	0.
Z	1.	-1.	-3.	-0	.000	.0	-.1	.0	0.	0.
0-SENS 1A DRIFT										
X	0.	-2.	5.	-0	.000	-0	.2	.0	0.	0.
Y	-1.	1.	-0.	.0	-.000	-0	-.0	.0	0.	0.
Z	1.	-0.	-2.	.0	.000	.0	-.1	.0	0.	0.
0-SENS SA DRIFT										
X	1.	0.	-1.	.0	-.000	.0	-0	.0	0.	0.
Y	1.	-2.	0.	-0	.001	.1	.0	.0	0.	0.
Z	2.	-2.	-9.	-0	.001	.1	-.2	.0	0.	0.
0-SENS OA DRIFT										
X	-0.	-0.	1.	-0	.000	-0	.1	.0	0.	0.
Y	5.	-9.	2.	-.1	.003	.1	.0	.0	0.	0.
Z	-0.	0.	1.	-0	-.000	-0	.0	.0	0.	0.
0-SQ SEN DRIFT										
X	0.	0.	-1.	.0	-.000	.0	-0	.0	0.	0.
Y	-0.	1.	-0.	.0	-.000	-0	-0	.0	0.	0.
Z	1.	-1.	-4.	.0	.001	.0	-.1	.0	0.	0.
ACCEL BIAS										
X	-7.	14.	5.	.1	-.004	-.2	.1	.0	0.	0.
Y	2.	-4.	-1.	-0	.001	.1	-0	.0	0.	0.
Z	-5.	8.	3.	.1	-.003	-.2	.1	.0	0.	0.
ACCEL SCALE FAC										
X	-9.	18.	7.	.2	-.005	-.3	.1	.0	0.	0.
Y	-0.	0.	0.	.0	-.000	-0	.0	.0	0.	0.
Z	-1.	2.	1.	.0	-.001	-.1	.0	.0	0.	0.
ACCEL 1A ALINE										
- OA										
X	2.	-3.	-1.	-0	.001	.1	-0	.0	0.	0.
Y	2.	-2.	-1.	-0	.001	.1	-0	.0	0.	0.
Z	-12.	19.	6.	.2	-.007	-.4	.1	.0	0.	0.

TABLE IV-A
RSS DATA AT SRB SEPARATION (EVENT)
(CONTINUED)

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	WEIGHT LB	SSME PROP LB
ACCEL 1A ALINE										
- SA										
X	-4.	7.	2.	.1	-.003	-.1	.1	.0	0.	0.
Y	5.	-8.	-2.	-.1	.003	.2	-.1	.0	0.	0.
Z	2.	-2.	-1.	-.0	.001	.1	-.0	.0	0.	0.
CO										
X	-5.	8.	1.	.1	-.003	-.2	.0	.0	0.	0.
Y	5.	-1.	94.	-.3	.003	.0	2.0	.0	0.	0.
Z	267.	-370.	8.	-2.8	.120	7.3	-1.7	.0	0.	0.
PERFORMANCE										
WEB ACT	1511.	6425.	-5187.	-61.4	-.013	-32.0	-16.7	5.8	-17801.	-17824.
S ISP	-1267.	-1794.	-526.	-39.4	.096	-13.1	-11.0	-.0	39.	37.
S PROP	-317.	-462.	-131.	-10.8	.026	-3.7	-3.0	-.0	14.	16.
S INERT	-250.	-343.	-104.	-9.4	.018	-3.5	-2.5	.0	2964.	0.
O THRST	-605.	-692.	-229.	-21.1	.007	-10.2	-5.4	.0	2757.	2757.
O ISP	34.	46.	13.	1.7	-.002	.7	.4	.0	-1008.	-1006.
O INERT	-14.	-19.	-6.	-.5	.001	-.2	-.1	.0	159.	0.
ET INERT	-16.	-23.	-7.	-.6	.001	-.2	-.2	.0	196.	0.
ET PROP	630.	870.	263.	23.6	-.049	8.5	6.5	.0	-7474.	-7474.
VENT	0.	0.	0.	.0	.000	.0	.0	.0	0.	0.
ATMOSPHERE										
COLD	336.	782.	176.	20.8	-.068	5.6	5.2	.0	0.	0.
RSS -	2236.	6843.	5234.	83.5	.180	38.5	23.1	5.8	19754.	19550.

TABLE IV-B
COVARIANCE MATRIX
AT SRB SEPARATION

	U ACT	V ACT	W ACT	U-DOT ACT	V-DOT ACT	W-DOT ACT	U NAV
U ACT	5.5557982+05						
V ACT	1.4824755+06	5.2025130+06					
W ACT	-7.4849582+05	-3.5296442+06	3.0441956+06				
U-DOT ACT	-1.8848790+03	-1.9151251+04	2.0624076+04	1.7216572+02			
V-DOT ACT	7.1576889+02	-2.2615167+04	3.3796019+04	3.0088751+02	6.3093412+02		
W-DOT ACT	-1.2424218+02	-7.9442877+03	1.0857034+04	9.3261995+01	1.8916370+02	5.9155858+01	
U NAV	-5.7893399+02	-5.5513963+02	7.2563674+02	-3.5120284+00	9.2546620+00	3.5173951+00	7.1121272+02
V NAV	3.3594229+02	-5.4413288+02	1.4781434+02	3.0633290+00	-2.0292540+01	1.1986307+01	-5.9990332+02
W NAV	1.4165970+02	1.1126612+03	-3.6113982+03	-2.4752109+00	6.7391676+00	-6.8713183+01	-1.9950982+02
U-DOT NAV	-5.3954078+00	1.0107855+01	4.6733168+00	-1.3708029-01	2.0362687-01	6.8997228-02	1.3933526+01
V-DOT NAV	4.1754376+00	-1.6640951+01	1.4206823+01	9.8199351-02	-2.5543625-01	3.4153240-01	-9.5173647+00
W-DOT NAV	7.8962771-01	1.4052839+01	-6.4645031+01	2.3220848-02	3.5453343-01	-1.4562906+00	-3.3214034+00
WT	-3.7892840+06	-1.3769478+07	9.9330062+06	5.4492800+04	7.4349840+04	2.5084659+04	1.8661953+03
	V NAV	W NAV	U-DOT NAV	V-DOT NAV	W-DOT NAV	WT	
V NAV	3.0450300+03						
W NAV	-4.0035788+02	4.7655875+03					
U-DOT NAV	-1.4441303+01	-4.6453462+00	2.8444386-01				
V-DOT NAV	4.9841482+01	-1.1271847+01	-2.2892943-01	8.3223343-01			
W-DOT NAV	-1.0858138+01	9.2899825+01	-7.4673249-02	-2.9298589-01	1.9030313+00		
WT	-1.4823770+03	-2.0174965+03	3.0913480+00	1.6143761+00	-1.0539232+00	4.3356012+07	

TABLE V-A

RSS DATA AT MECO (EVENT)

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	WEIGHT LB	SSME PROP LB
PLATFORM ALINE										
AZIMUTH	-99.	-712.	4517.	-.4	-.001	-.6	24.4	-.0	2.	2.
TILT	1207.	-1333.	-141.	-4.7	.013	5.7	-.5	-.0	17.	17.
ROLL	201.	22.	-1270.	.3	-.001	-.2	-3.0	-.0	5.	5.
DRIFT BIAS										
X	3.	-5.	233.	.1	.000	.1	1.8	-.0	0.	0.
Y	217.	-130.	-15.	-.7	.004	1.6	-.1	-.0	0.	0.
Z	-0.	3.	-94.	.1	.001	-.3	-.3	.0	-0.	-0.
0-SENS 1A DRIFT										
X	2.	-31.	388.	.1	.000	.0	2.5	-.0	0.	0.
Y	-64.	46.	5.	.2	.001	-.3	-.0	.0	-0.	-0.
Z	-20.	7.	-109.	.2	.001	-.7	-.4	.0	-0.	-0.
0-SENS 5A DRIFT										
X	1.	6.	-71.	.0	.000	-.0	-.3	.0	-0.	-0.
Y	348.	-174.	-20.	-1.1	.007	3.1	-.2	-.0	0.	0.
Z	24.	2.	-203.	.1	-.001	-.3	-.6	.0	-0.	-0.
0-SENS 0A DRIFT										
X	8.	8.	372.	.4	.000	.1	3.5	-.0	0.	0.
Y	356.	-259.	-28.	-1.1	.005	2.1	-.1	-.0	1.	1.
Z	-6.	-1.	35.	-.0	-.000	-.1	.1	.0	-0.	-0.
0-SQ SEN DRIFT										
X	-1.	9.	-112.	-.0	-.000	-.0	-.7	-.0	0.	0.
Y	-55.	43.	5.	.1	.000	.0	-.0	.0	0.	0.
Z	7.	2.	-132.	.1	-.001	-.3	-.4	.0	-0.	-0.
ACCEL BIAS										
X	-688.	187.	19.	.6	-.006	-2.6	.0	-.0	28.	28.
Y	8.	-57.	637.	-.2	-.000	-.0	2.3	.0	-4.	-4.
Z	-158.	-604.	-49.	-2.3	-.003	-1.4	-.2	-.0	59.	59.
ACCEL SCALE FAC										
X	-520.	180.	12.	.3	-.003	-1.4	-.0	-.0	25.	25.
Y	-1.	-18.	-69.	-.0	.000	.0	.1	-.0	4.	4.
Z	-130.	-748.	-42.	-2.8	-.003	-1.4	-.2	-.0	65.	65.
ACCEL 1A ALINE										
- OA										
X	148.	-54.	-5.	.1	-.000	-.2	-.0	.0	-8.	-8.
Y	9.	-168.	976.	-.4	-.000	-.1	5.2	-.0	7.	7.
Z	-211.	-489.	-64.	-2.0	-.004	-1.6	-.2	-.0	59.	59.

TABLE V-A
RSS DATA AT MECO (EVENT)
(CONTINUED)

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	WEIGHT LB	SSME PROP LB
ACCEL IA ALINE										
- SA										
X	-1028.	219.	28.	1.2	-.012	-5.5	.1	-.0	34.	34.
Y	10.	-36.	852.	-.2	-.000	-.1	2.0	.0	-15.	-15.
Z	31.	-88.	8.	-.3	.000	.1	-.0	-.0	4.	4.
CO										
X	2.	24.	-2.	-.0	-.000	-.0	-.0	-.0	1.	1.
Y	1.	-170.	-2.	.0	-.000	-.0	-.0	.0	-2.	-2.
Z	1.	-1068.	-2.	.4	.000	.2	.2	.0	-55.	-55.
PERFORMANCE										
WEB ACT	-29.	-36361.	1.	.0	.000	.2	.3	2.4	-4810.	-4810.
S ISP	-2.	-6206.	-0.	-.0	-.000	-.2	-.3	.6	-1241.	-1241.
S PROP	4.	-1678.	-2.	-.1	-.000	-.0	-.1	.2	-339.	-339.
S INERT	1.	-1416.	-1.	-.1	-.000	-.1	-.1	.1	-294.	-294.
O THRST	-19.	29972.	-4.	-.5	-.000	-.2	-.6	3.9	-666.	-666.
O ISP	-3.	-7864.	0.	-.3	-.001	-.2	-.4	-.8	-1493.	-1493.
O INERT	2.	264.	-3.	.0	-.000	-.0	-.0	.0	10.	-149.
ET INERT	1.	327.	-2.	.0	-.000	-.0	-.0	.1	13.	-183.
ET PROP	-1.	-12529.	-2.	.4	.000	.2	.2	-2.2	-515.	-515.
VENT	0.	0.	0.	.0	.000	.0	.0	.0	0.	0.
ATMOSPHERE										
COLD	-1.	3293.	-1.	.0	-.000	-.0	.0	-.3	655.	655.
RSS -	1930.	49986.	4958.	6.8	.022	9.8	25.7	5.2	5316.	5321.

TABLE V-B
COVARIANCE MATRIX
AT MECO

	U ACT	V ACT	W ACT	U-DOT ACT	V-DOT ACT	W-DOT ACT	U NAV
U ACT	4.1368930+05						
V ACT	-1.5174097+05	2.7761695+08					
W ACT	-9.9288540+04	-3.6659197+05	2.7313491+06				
U-DOT ACT	2.1807037+03	-3.3691734+05	7.2907546+01	4.1954629+02			
V-DOT ACT	-8.1581232+02	9.3234420+02	-1.8955304+02	-4.7238311+00	5.1775440+00		
W-DOT ACT	-4.0026039+02	-4.6297125+03	1.3914240+04	3.7371394+00	-8.7543750-01	7.3632632+01	
U NAV	-4.1376326+05	2.1479369+05	9.8028281+04	-2.2590220+03	8.1755939+02	3.9010951+02	4.1400134+05
V NAV	2.3304296+05	-4.6804097+05	4.5934530+05	1.5450572+03	-1.5182441+03	2.5059433+03	-2.3431618+05
W NAV	9.9304894+04	3.5126104+05	-2.7331537+06	-5.3262704+01	1.8997562+02	-1.3923316+04	-9.8906224+04
U-DOT NAV	-2.2710077+03	1.4533564+03	-2.2319461+02	-1.3530271+01	5.5124902+00	-1.3493308+00	2.2720571+03
V-DOT NAV	8.3080656+02	-1.3661746+03	1.8830123+02	5.3512099+00	-5.1273457+00	9.2497271-01	-8.3212989+02
W-DOT NAV	4.1107225+02	1.9499055+03	-1.3950468+04	-4.0505079-01	9.5665196-01	-7.3759526+01	-4.0834575+02
WT	8.6602279+03	2.0436243+07	-1.3330231+03	-2.4719518+04	5.8870728+01	1.1810768+01	1.0353291+04
	V NAV	W NAV	U-DOT NAV	V-DOT NAV	W-DOT NAV	WT	
V NAV	5.5729487+05						
W NAV	-4.5972757+05	2.7349609+06					
U-DOT NAV	-1.6738344+03	2.2328174+02	1.3800055+01				
V-DOT NAV	1.5192286+03	-1.8859056+02	-5.5828362+00	5.1345088+00			
W-DOT NAV	-2.5211954+03	1.3250357+04	1.3162014+00	-9.4946690-01	7.3975497+01		
WT	1.3799967+04	4.6231215+02	3.3910143+01	5.0319746+01	-7.4095044-01	3.1400576+06	

TABLE VI-A

RSS DATA AT NOMINAL MECO + 30 SEC

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	WEIGHT LB	OMS PROP LB
PLATFORM ALINE										
AZIMUTH	-119.	-692.	5242.	-.4	-.001	-.7	24.1	.0	0.	0.
TILT	1374.	-1307.	-154.	-4.9	.012	5.4	-.4	.0	0.	0.
ROLL	195.	90.	-1359.	.3	-.000	-.2	-2.9	.0	0.	0.
DRIFT BIAS										
X	5.	-2.	286.	.1	.000	.1	1.8	.0	0.	0.
Y	264.	-159.	-18.	-.8	.003	1.5	-.1	.0	0.	0.
Z	-8.	4.	-103.	.1	-.001	-.3	-.3	.0	0.	0.
0-SENS 1A DRIFT										
X	2.	-28.	462.	.1	.000	.0	2.5	.0	0.	0.
Y	-71.	52.	4.	.2	.001	-.2	-.0	.0	0.	0.
Z	-40.	12.	-120.	.2	.001	-.6	-.4	.0	0.	0.
0-SENS 5A DRIFT										
X	1.	6.	-81.	.0	-.000	-.0	-.3	.0	0.	0.
Y	440.	-221.	-24.	-1.3	.007	3.1	-.2	.0	0.	0.
Z	17.	4.	-220.	.1	-.001	-.2	-.6	.0	0.	0.
0-SENS 0A DRIFT										
X	12.	21.	476.	.4	.000	.2	3.5	.0	0.	0.
Y	419.	-300.	-31.	-1.2	.005	2.1	-.1	.0	0.	0.
Z	-8.	-1.	38.	-.0	-.000	-.1	.1	.0	0.	0.
0-SQ SEN DRIFT										
X	-2.	10.	-132.	-.0	-.000	-.0	-.7	.0	0.	0.
Y	-54.	48.	4.	.1	.000	.0	-.0	.0	0.	0.
Z	-2.	4.	-145.	.1	-.001	-.3	-.4	.0	0.	0.
ACCEL BIAS										
X	-764.	578.	20.	.7	-.006	-2.6	.0	.0	0.	0.
Y	6.	-109.	706.	-.2	-.000	-.1	2.3	.0	0.	0.
Z	-198.	74.	-55.	-2.3	-.004	-1.6	-.2	.0	0.	0.
ACCEL SCALE FAC										
X	-560.	515.	11.	.3	-.003	-1.4	-.0	.0	0.	0.
Y	-0.	26.	-65.	-.0	-.000	-.0	.1	.0	0.	0.
Z	-169.	-0.	-49.	-2.7	-.004	-1.6	-.2	.0	0.	0.
ACCEL 1A ALINE										
- OA										
X	141.	-160.	-5.	.1	-.000	-.2	-.0	.0	0.	0.
Y	8.	-86.	1130.	-.4	-.000	-.1	5.1	.0	0.	0.
Z	-256.	202.	-71.	-2.0	-.004	-1.8	-.2	.0	0.	0.

TABLE VI-A

RSS DATA AT NOMINAL MECO + 30 SEC
(CONTINUED)

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	HEIGHT LB	OMS PROP LB
ACCEL TA ALINE										
- SA										
X	-1188.	725.	31.	1.4	-.012	-5.4	.1	.0	0.	0.
Y	6.	-224.	911.	-.1	-.000	-.1	2.0	.0	0.	0.
Z	33.	-51.	7.	-.3	.000	.1	-.0	.0	0.	0.
CO										
X	1.	41.	-2.	-.0	-.000	-.0	-.0	.0	0.	0.
Y	-1.	-198.	-2.	.0	-.000	-.0	-.0	.0	0.	0.
Z	2.	-1672.	5.	.4	.000	.2	.2	.0	0.	0.
PERFORMANCE										
WEB ACT	-723.	-97852.	11.	1.1	.001	.5	.3	.0	0.	0.
S ISP	-147.	-22010.	-9.	-.0	.000	-.1	-.3	.0	0.	0.
S PROP	-34.	-5999.	-4.	-.1	.000	-.0	-.1	.0	0.	0.
S INERT	-33.	-5167.	-4.	-.0	.000	-.1	-.1	.0	0.	0.
O THRST	-951.	-70808.	-23.	.4	.001	.2	-.4	.0	0.	0.
O ISP	146.	11416.	-11.	-.5	-.001	-.3	-.4	.0	0.	0.
O INERT	-8.	-921.	-3.	.0	.000	.0	-.0	.0	159.	0.
ET INERT	-12.	-1128.	-2.	.0	-.000	-.0	-.0	.0	0.	0.
ET PROP	421.	42922.	5.	-.2	-.000	-.1	.1	.0	0.	0.
VENT	0.	0.	0.	.0	.000	.0	.0	.0	0.	0.
ATMOSPHERE										
COLD	64.	11625.	-2.	-.0	-.000	-.1	-.0	.0	0.	0.
RSS -	2551.	131380.	5711.	7.0	.022	9.7	25.5	.0	159.	0.

TABLE VI-B
COVARIANCE MATRIX
AT NOMINAL MECO + 30 SEC

	U ACT	V ACT	W ACT	U-DOT ACT	V-DOT ACT	W-DOT ACT	U NAV
U ACT	7.2291691+05						
V ACT	1.7623440+07	1.9178601+09					
W ACT	-1.2265633+05	-3.3779609+05	3.6244159+06				
U-DOT ACT	-1.5042590+04	-2.3200701+06	-3.6915791+01	2.8169639+03			
V-DOT ACT	-9.4599348+02	7.3020134+03	-1.8957692+02	-1.2484034+01	5.4729719+00		
W-DOT ACT	-4.3685553+02	-1.9055550+03	1.5953959+04	4.8597189-01	-7.5667020-01	7.2281441+01	
U NAV	-5.3998152+05	4.4375384+05	1.2233035+05	-2.8034569+03	1.0100189+03	4.4216777+02	5.4158157+05
V NAV	3.1067069+05	-3.9446572+05	5.3557719+05	1.5396027+03	-1.7473235+03	2.4949540+03	-3.1056296+05
W NAV	1.2459493+05	4.0691794+05	-3.6270307+06	-4.3747922+01	1.9126130+02	-1.5658039+04	-1.2275502+05
U-DOT NAV	-2.6371009+03	2.1151131+03	-2.4650083+02	-1.4146254+01	5.6448427+00	-1.2654745+00	2.8432414+03
V-DOT NAV	1.0231411+03	-9.7469299+02	2.0104452+02	4.6984254+00	-5.4371747+00	8.5360426-01	-1.0214030+03
W-DOT NAV	4.6556603+02	1.9568259+03	-1.6006233+04	-3.5105024-01	8.2507947-01	-7.2468804+01	-4.6802623+02
WT	-1.4378392+02	-1.6310768+04	-5.7258315+01	1.9884829+01	3.9122042-01	-2.9714506-01	-3.0942668+01
	V NAV	W NAV	U-DOT NAV	V-DOT NAV	W-DOT NAV	WT	
V NAV	6.7473787+05						
W NAV	-5.3535729+05	3.6313559+06					
U-DOT NAV	-1.8993662+03	2.4548162+02	1.3908237+01				
V-DOT NAV	1.7585112+03	-2.0252746+02	-5.8911639+00	5.4739386+00			
W-DOT NAV	-2.5993672+03	1.6022916+04	1.2381744+00	-8.7865125-01	7.2726746+01		
WT	2.2626606+01	4.2006092+01	-4.0210026-02	-3.2506244-02	-1.9480487-02	2.8239260+03	

TABLE VII-A
RSS DATA AT INSERTION (EVENT)

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	WEIGHT LB	OMS PROP LB
PLATFORM ALINE										
AZIMUTH	-192.	-688.	7822.	-.3	-.002	-.7	23.3	.0	-0.	-0.
TILT	1895.	-2539.	-201.	-5.6	.010	4.3	-.4	-.0	1.	0.
ROLL	179.	-15.	-1667.	.4	-.000	-.1	-2.7	-.0	0.	0.
DRIFT BIAS										
X	16.	190.	477.	.1	.000	.1	1.7	.0	-0.	-0.
Y	426.	-235.	-27.	-.9	.003	1.4	-.1	.0	-0.	-0.
Z	-34.	122.	-135.	.1	.001	-.2	-.3	.0	-0.	-0.
0-SENS 1A DRIFT										
X	9.	148.	726.	.1	.000	.1	2.4	.0	-0.	-0.
Y	-93.	133.	4.	.2	.000	-.2	-.0	.0	-0.	-0.
Z	-105.	115.	-158.	.3	.001	-.6	-.3	.0	-0.	-0.
0-SENS 5A DRIFT										
X	2.	124.	-115.	.0	.000	.0	-.3	.0	-0.	-0.
Y	763.	-378.	-40.	-1.6	.006	2.9	-.1	.0	-0.	-0.
Z	-8.	-11.	-280.	.1	-.000	-.2	-.5	-.0	0.	0.
0-SENS 0A DRIFT										
X	39.	109.	849.	.3	.001	.3	3.4	.0	-0.	-0.
Y	630.	-509.	-45.	-1.5	.004	1.8	-.1	.0	-0.	-0.
Z	-11.	61.	48.	.0	-.000	-.0	.1	.0	-0.	-0.
0-SQ SEN DRIFT										
X	-5.	56.	-203.	.0	-.000	-.0	-.6	.0	-0.	-0.
Y	-47.	128.	2.	.1	.000	.1	-.0	.0	-0.	-0.
Z	-31.	-3.	-190.	.1	-.001	-.2	-.4	-.0	0.	0.
ACCEL BIAS										
X	-1036.	3837.	22.	1.2	-.007	-3.0	-.1	.1	-9.	-5.
Y	-2.	-102.	959.	-.2	-.000	-.1	2.6	.0	0.	0.
Z	-472.	-6676.	-75.	-2.4	-.006	-2.6	-.2	-.3	15.	9.
ACCEL SCALE FAC										
X	-711.	678.	9.	.5	-.003	-1.4	-.0	.0	-1.	-1.
Y	1.	114.	-49.	-.0	.000	.0	.2	.0	-0.	-0.
Z	-391.	-1264.	-73.	-2.5	-.005	-2.3	-.2	-.0	1.	0.
ACCEL 1A ALINE										
- OA										
X	122.	-84.	-6.	.1	-.000	-.2	-.0	.0	0.	0.
Y	-7.	-242.	1677.	-.4	-.000	-.2	4.9	-.0	0.	0.
Z	-474.	135.	-94.	-1.6	-.005	-2.2	-.2	.0	-2.	-1.

TABLE VII-A
RSS DATA AT INSERTION (EVENT)
(CONTINUED)

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	WEIGHT LB	OMS PROP LB
ACCEL IA ALINE										
- SA										
X	-1764.	1180.	41.	2.1	-.011	-5.1	.1	.0	-1.	-1.
Y	-2.	-122.	1117.	-.1	-.000	-.1	1.8	.0	0.	0.
Z	34.	-231.	3.	-.3	-.000	-.0	-.0	-.0	0.	0.
CO										
X	-1.	120.	-2.	.0	.000	.0	-.0	.0	-0.	-0.
Y	-4.	-234.	-3.	.0	-.000	-.0	-.0	-.0	0.	0.
Z	-23.	-5392.	30.	.1	-.000	-.1	.2	-.1	12.	6.
PERFORMANCE										
WEB ACT	-60.	-39211.	27.	.2	-.001	-.7	.2	2.3	8.	4.
S ISP	16.	-2700.	-49.	.0	-.000	-.0	-.4	.8	-9.	-5.
S PROP	11.	-382.	-12.	-.0	.000	.0	-.1	.2	-3.	-2.
S INERT	4.	-305.	-13.	-.0	.000	.0	-.1	.2	-3.	-2.
O THRST	39.	36705.	-83.	-.2	.001	.6	-.7	4.2	-18.	-10.
O ISP	18.	-3431.	-61.	.0	-.000	-.0	-.5	-.6	-12.	-7.
O INERT	16.	1773.	-5.	-.0	.000	.0	-.0	.1	155.	-2.
ET INERT	-2.	113.	-3.	.0	-.000	-.0	-.0	.0	1.	0.
ET PROP	-32.	-16506.	25.	.1	-.001	-.3	.2	-2.3	11.	6.
VENT	-16.	-1825.	0.	.0	-.000	-.0	.0	-.1	-334.	3.
ATMOSPHERE										
COLD	-8.	2573.	-0.	.0	.000	.0	.0	-.4	2.	1.
RSS	3187.	57352.	8410.	7.7	.021	9.4	24.6	5.4	370.	20.

TABLE VII-B
COVARIANCE MATRIX
AT INSERTION

	U ACT	V ACT	W ACT	U-DOT ACT	V-DOT ACT	W-DOT ACT	U NAV
U ACT	1.1288521+06						
V ACT	-4.4477759+05	3.6546974+08					
W ACT	-2.4405816+05	-9.8063993+05	7.8584611+06				
U-DOT ACT	3.7295072+03	-4.3777853+05	5.0634184+02	5.3419238+02			
V-DOT ACT	-1.7696992+03	6.6011843+03	-2.0908043+02	-1.1647185+01	6.7144210+00		
W-DOT ACT	-6.2922581+02	-5.4819672+03	2.2848458+04	4.6902636+00	-6.2774462-01	6.7422275+01	
U NAV	-1.1334656+06	1.0039170+06	2.3751700+05	-4.4061263+03	1.8014621+03	6.0325008+02	1.1396249+06
V NAV	6.9377459+05	-1.9565132+06	8.0406273+05	3.7069323+03	-2.8068446+03	2.4320479+03	-7.0532194+05
W NAV	2.4627100+05	4.8941577+05	-7.8781284+06	9.0254231+01	2.0785265+02	-2.2899062+04	-2.4068697+05
U-DOT NAV	-4.0276277+03	3.7737264+03	-2.9755466+02	-1.5942589+01	7.1360150+00	-1.0597561+00	4.0509224+03
V-DOT NAV	1.7669657+03	-4.9615312+03	2.1542389+02	9.6559762+00	-6.7500699+00	6.3966667-01	-1.7974507+03
W-DOT NAV	6.5190566+02	1.4933071+03	-2.2933521+04	1.5976490-01	5.8791609-01	-6.7606059+01	-6.3444474+02
WT	1.3781443+03	-4.1035002+04	-2.7903030+01	4.9614838+01	-7.4507279+00	1.4244333+00	-8.8706903+02
	V NAV	W NAV	U-DOT NAV	V-DOT NAV	W-DOT NAV	WT	
V NAV	1.2978684+06						
W NAV	-8.0665109+05	7.8998176+06					
U-DOT NAV	-2.9281235+03	2.9000800+02	1.4938891+01				
V-DOT NAV	2.8251469+03	-2.1613705+02	-7.1257837+00	6.7980174+00			
W-DOT NAV	-2.4346260+03	2.3000098+04	9.6934602-01	-6.1444691-01	6.7918537+01		
WT	2.0677874+03	3.6365540+02	-2.8386409+00	6.0649453+00	9.8155843-01	1.5221075+04	

TABLE VIII-A
RSS DATA AT NOMINAL INSERTION + 150 SEC

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	WEIGHT LB	OMS PROP LB
PLATFORM ALINE										
AZIMUTH	-307.	-704.	11177.	-.2	-.002	-.8	21.2	.0	-0.	-0.
TILT	2417.	-3395.	-260.	-6.2	.006	2.6	-.4	.0	0.	0.
ROLL	179.	128.	-2042.	.4	.000	.1	-2.3	.0	0.	0.
DRIFT BIAS										
X	36.	23.	729.	.1	.000	.2	1.6	.0	-0.	-0.
Y	619.	-558.	-40.	-1.2	.003	1.1	-.1	.0	-0.	-0.
Z	-67.	52.	-173.	.2	-.000	-.2	-.2	.0	-0.	-0.
O-SENS 1A DRIFT										
X	18.	-13.	1071.	.1	.000	.1	2.2	.0	-0.	-0.
Y	-114.	138.	3.	.2	.000	-.1	-.0	.0	-0.	-0.
Z	-186.	126.	-204.	.4	.001	-.5	-.3	.0	-0.	-0.
O-SENS SA DRIFT										
X	4.	12.	-159.	.0	.000	.0	-.3	.0	-0.	-0.
Y	1159.	-927.	-61.	-2.1	.005	2.4	-.1	.0	-0.	-0.
Z	-33.	47.	-353.	.2	-.000	-.1	-.4	.0	0.	0.
O-SENS OA DRIFT										
X	94.	91.	1346.	.3	.001	.4	3.2	.0	-0.	-0.
Y	872.	-304.	-61.	-1.8	.003	1.4	-.1	.0	-0.	-0.
Z	-15.	2.	61.	.0	-.000	-.0	.1	.0	-0.	-0.
O-SQ SEN DRIFT										
X	-6.	11.	-297.	.0	-.000	-.0	-.6	.0	-0.	-0.
Y	-31.	90.	-1.	.1	.000	.1	-.0	.0	-0.	-0.
Z	-64.	53.	-245.	.2	-.000	-.2	-.3	.0	0.	0.
ACCEL BIAS										
X	-1506.	1266.	10.	1.8	-.006	-2.8	-.1	.0	-5.	-5.
Y	-24.	-160.	1337.	-.2	-.000	-.2	2.4	.0	0.	0.
Z	-869.	-328.	-98.	-1.9	-.008	-3.5	-.1	.0	9.	9.
ACCEL SCALE FAC										
X	-912.	894.	5.	.8	-.003	-1.3	-.0	.0	-1.	-1.
Y	-1.	22.	-24.	-.0	-.000	-.0	.2	.0	-0.	-0.
Z	-802.	-477.	-103.	-2.0	-.007	-3.3	-.2	.0	0.	0.
ACCEL 1A ALINE										
- OA										
X	101.	-174.	-8.	.1	-.000	-.1	-.0	.0	0.	0.
Y	-44.	-183.	2389.	-.4	-.001	-.3	4.5	.0	0.	0.
Z	-861.	-34.	-123.	-1.2	-.006	-2.9	-.2	.0	-1.	-1.

TABLE VIII-A
RSS DATA AT NOMINAL INSERTION + 150 SEC
(CONTINUED)

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	WEIGHT LB	OMS PROP LB
ACCEL 1A ALINE										
- SA										
X	-2502.	1909.	54.	3.0	-.010	-4.6	.1	.0	-1.	-1.
Y	-24.	-260.	1368.	-.1	-.000	-.2	1.5	.0	0.	0.
Z	22.	-145.	-3.	-.3	-.000	-.1	-.0	.0	0.	0.
CO										
X	-1.	42.	-2.	.0	.000	.0	-.0	.0	-0.	-0.
Y	-5.	-197.	-5.	.0	-.000	-.0	-.0	.0	0.	0.
Z	-4.	-1627.	67.	.1	-.000	-.1	.2	.0	0.	6.
PERFORMANCE										
WEB ACT	-969.	-98164.	51.	1.1	-.003	-1.3	.3	.0	4.	4.
S ISP	-203.	-22113.	-115.	.3	-.000	-.2	-.4	.0	-5.	-5.
S PROP	-50.	-6036.	-23.	.1	-.000	-.1	-.1	.0	-2.	-2.
S INERT	-48.	-5197.	-26.	.0	-.000	-.1	-.1	.0	-2.	-2.
O THRST	-1095.	-71372.	-175.	1.1	-.001	-.5	-.5	.0	-10.	-10.
O ISP	170.	11473.	-141.	-.2	.000	.2	-.6	.0	-7.	-7.
O INERT	-8.	-936.	-10.	-.0	.000	.0	-.0	.0	157.	-2.
ET INERT	-15.	-1129.	-4.	.0	-.000	-.0	-.0	.0	0.	0.
ET PROP	515.	43218.	53.	-.6	.001	.4	.1	.0	6.	6.
VENT	8.	-41.	-12.	-.8	.000	.1	-.2	.0	3.	3.
ATMOSPHERE										
COLD	89.	11678.	1.	-.1	.000	.1	-.0	.0	1.	1.
RSS -	4746.	132075.	11938.	8.6	.020	9.0	22.4	.0	158.	20.

TABLE VIII-B
COVARIANCE MATRIX
AT NOMINAL INSERTION + 150 SEC

	U ACT	V ACT	W ACT	U-DOT ACT	V-DOT ACT	W-DOT ACT	U NAV
U ACT	2.5022958+06						
V ACT	2.0728128+07	1.9382057+09					
W ACT	-4.6812303+05	3.2753613+05	1.5834142+07				
U-DOT ACT	-2.0728557+04	-2.3217183+06	-1.4032455+03	2.7900089+03			
V-DOT ACT	-2.9496493+03	8.2333368+03	-1.2784187+02	-1.3123465+01	8.0854874+00		
W-DOT ACT	-8.0274054+02	-6.9304910+02	2.9627055+04	-1.1419534+00	-2.6566093-01	5.5932949+01	
U NAV	-2.2439911+06	1.9503469+06	4.7803935+05	-6.4584029+03	3.0014721+03	8.1223855+02	2.2636902+06
V NAV	1.5773202+06	-2.4101229+06	1.1184145+06	4.3432919+03	-4.6359498+03	2.1733901+03	-1.5945026+06
W NAV	4.9905953+05	8.4572625+05	-1.5894237+07	9.7832954+01	1.1766023+02	-2.9710043+04	-4.9049230+05
U-DOT NAV	-6.1073304+03	5.6173748+03	-2.6261844+02	-1.1768290+01	8.8594261+00	-6.7843007-01	6.1633555+03
V-DOT NAV	2.9881079+03	-4.1012849+03	1.3206103+02	8.0281621+00	-8.2474388+00	2.8926464-01	-3.0023992+03
W-DOT NAV	8.7095654+02	1.6294851+03	-2.9821786+04	8.4773511-02	2.1413130-01	-5.6241830-01	-8.6194128+02
WT	1.4133421+03	5.1239506+04	7.3068747+01	-6.8582041+01	-4.0566956+00	7.1919020-01	-4.7121950+02
	V NAV	W NAV	U-DOT NAV	V-DOT NAV	W-DOT NAV	WT	
V NAV	2.8324059+06						
W NAV	-1.1182131+06	1.5944972+07					
U-DOT NAV	-4.0625044+03	2.3497981+02	1.7184101+01				
V-DOT NAV	4.7625663+03	-1.2193199+02	-8.8817463+00	8.5743444+00			
W-DOT NAV	-2.1540972+03	2.5947956+04	5.5836068-01	-2.2244269-01	5.6756733+01		
WT	1.8479509+03	3.1163850+02	-1.2357023+00	4.1762032+00	5.7618952-01	2.7878204+03	

TABLE IX-A

RSS DATA AT CIRCULARIZATION (EVENT)

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	WEIGHT LB	OHS PROP LB
PLATFORM ALINE										
AZIMUTH	-1748.	3053.	8854.	1.5	-.000	-.1	-22.4	-.0	0.	0.
TILT	-8183.	-6203.	-120.	6.2	-.021	-9.4	.5	-.0	0.	0.
ROLL	1458.	-1979.	-481.	-1.1	.002	.7	3.2	-.0	0.	0.
DRIFT BIAS										
X	483.	-755.	736.	-.4	.000	.1	-1.7	.0	-0.	-0.
Y	-682.	-3609.	-35.	.4	-.004	-1.9	.1	-.0	0.	0.
Z	138.	558.	-72.	-.1	.001	.3	.3	.0	-0.	-0.
0-SENS 1A DRIFT										
X	277.	-425.	964.	-.2	.000	.1	-2.2	.0	-0.	-0.
Y	256.	358.	-5.	-.2	.001	.3	.0	.0	-0.	-0.
Z	159.	1344.	-87.	-.0	.002	.7	.4	.0	-0.	-0.
0-SENS 5A DRIFT										
X	94.	21.	-105.	-.1	.000	.0	.3	.0	-0.	-0.
Y	-880.	-7125.	-60.	.3	-.008	-3.6	.1	.0	-0.	-0.
Z	278.	30.	-123.	-.2	.001	.3	.6	-.0	0.	0.
0-SENS 0A DRIFT										
X	1275.	-2117.	1510.	-1.1	.001	.3	-3.0	.0	-0.	-0.
Y	-1387.	-4136.	-40.	.9	-.006	-2.8	.1	-.0	0.	-0.
Z	-47.	196.	23.	.0	.000	.0	-.1	.0	-0.	-0.
0-SQ SEN DRIFT										
X	-19.	76.	-255.	.0	.000	.0	.6	.0	-0.	-0.
Y	247.	-273.	-11.	-.2	.000	.1	.0	.0	-0.	-0.
Z	157.	324.	-106.	-.1	.001	.4	.4	-.0	0.	0.
ACCEL BIAS										
X	-579.	20065.	-76.	6.1	.039	17.4	.1	.3	-14.	-14.
Y	-736.	5117.	961.	.7	-.002	-1.1	-2.2	.2	-6.	-6.
Z	-10117.	71960.	-50.	11.6	-.017	-7.7	.2	2.1	-83.	-83.
ACCEL SCALE FAC										
X	-1299.	6659.	-23.	1.2	.002	1.0	.0	-.0	-0.	-0.
Y	-42.	135.	132.	.0	-.000	-.0	-.1	.0	-0.	-0.
Z	-9681.	15695.	-90.	8.3	-.006	-2.5	.2	-.1	1.	1.
ACCEL 1A ALINE										
- OA										
X	498.	-609.	-0.	-.3	.001	.3	.0	.0	0.	0.
Y	-1255.	1593.	1866.	1.1	-.001	-.5	-4.8	-.0	0.	0.
Z	-7390.	14581.	-71.	6.4	-.003	-1.4	.2	-.0	-1.	-1.

TABLE IX-A
RSS DATA AT CIRCULARIZATION (EVENT)
(CONTINUED)

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	WEIGHT LB	OMS PROP LB
ACCEL 1A ALINE										
- SA										
X	-1839.	18102.	22.	2.2	.011	5.0	-.1	-.0	-1.	-1.
Y	-481.	593.	321.	.4	-.000	-.1	-2.2	.0	0.	0.
Z	-881.	788.	-25.	.7	-.001	-.4	.0	-.0	0.	0.
CO										
X	12.	87.	1.	-.0	.000	.0	.0	.0	-0.	-0.
Y	-20.	-280.	-2.	.0	.000	.0	.0	-.0	0.	0.
Z	127.	-4854.	136.	-.1	.000	.0	-.2	-.1	6.	6.
PERFORMANCE										
WEB ACT	34.	-37013.	82.	-.0	.000	.1	-.2	2.4	2.	2.
S ISP	109.	-2622.	-252.	-.1	.000	.0	.3	.8	-6.	-6.
S PROP	-13.	-447.	-38.	.0	.000	.0	.1	.2	-2.	-2.
S INERT	-30.	-394.	-44.	.0	.000	.0	.1	.2	-2.	-2.
O THRST	133.	34971.	-335.	-.1	-.000	-.0	.5	4.2	-9.	-9.
O ISP	81.	-3306.	-305.	-.1	.000	.0	.4	-.6	-7.	-7.
O INERT	-32.	3127.	-15.	.0	.000	.0	.0	.2	155.	-4.
ET INERT	33.	101.	-1.	-.0	.000	.0	.0	.0	0.	0.
ET PROP	96.	-15495.	93.	-.1	.000	.0	-.2	-2.3	5.	5.
VENT	-1857.	-3779.	-139.	1.6	-.000	-.0	.1	-.2	8.	8.
ATMOSPHERE										
COLD	1.	2476.	8.	-.0	-.000	-.0	-.0	-.4	1.	1.
RSS -	18453.	97403.	9348.	18.4	.051	22.6	23.7	5.8	177.	86.

TABLE IX-B
COVARIANCE MATRIX
AT CIRCULARIZATION

	U ACT	V ACT	W ACT	U-DOT ACT	V-DOT ACT	W-DOT ACT	U NAV
U ACT	3.7835686+07						
V ACT	-1.0961212+08	1.0541414+09					
W ACT	-1.5167192+06	1.2267846+06	9.7104430+06				
U-DOT ACT	1.4765303+05	-1.2345552+06	-1.6462000+03	1.5026175+03			
V-DOT ACT	-3.5171010+04	1.3029541+05	1.2591970+03	-1.5889228+02	3.6914776+01		
W-DOT ACT	4.2123286+03	-5.1130982+03	-2.4497845+04	6.2856873+00	-3.5559563+00	6.2610359+01	
U NAV	-4.8169395+07	1.7513995+08	1.6268747+06	-2.4539981+05	4.2859803+04	-4.2935984+03	7.4889064+07
V NAV	6.3156950+07	-3.8322838+08	-2.6107061+06	4.3166752+05	-7.4050158+04	7.4337664+03	-8.7190627+07
W NAV	1.5699280+06	-3.3695160+06	-1.0332105+07	3.9081689+03	-1.3541994+03	2.5948094+04	-1.5440402+06
U-DOT NAV	-9.3632507+04	4.5417812+05	3.2622921+03	-5.6357637+02	9.3539930+01	-9.0014230+00	1.4305720+05
V-DOT NAV	4.4305561+04	-1.8865954+05	-1.3562284+03	2.4547360+02	-4.3803309+01	3.6321760+00	-6.6325149+04
W-DOT NAV	-4.2541779+03	7.8855730+03	2.4262879+04	-9.2312484+00	3.6493318+00	-6.2129146+01	4.1839206+03
WT	9.1619656+04	-6.9319350+05	4.9955758+02	8.5027090+02	-1.1209894+02	-1.0346200+00	-1.7540352+05
	V NAV	W NAV	U-DOT NAV	V-DOT NAV	W-DOT NAV	WT	
V NAV	2.3051525+08						
W NAV	2.7905407+06	1.4885820+07					
U-DOT NAV	-2.5420723+05	-3.2549296+03	3.3601999+02				
V-DOT NAV	9.5453596+04	1.3456458+03	-1.3708696+02	6.3227631+01			
W-DOT NAV	-7.6541013+03	-2.4135912+04	8.9741907+00	-3.5957698+00	6.2413723+01		
WT	3.0578880+05	3.6842184+02	-3.9973227+02	1.8611983+02	7.0570612-01	3.4885703+03	

TABLE X-A

RSS DATA AT NOMINAL CIRCULARIZATION + 50 SEC

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	WEIGHT LB	OMS PROP LB
PLATFORM ALINE										
AZIMUTH	-1752.	3299.	7974.	1.5	-.000	-.1	-22.8	.0	0.	0.
TILT	-8545.	-5084.	-102.	6.6	-.021	-9.2	.5	.0	0.	0.
ROLL	1486.	-1961.	-355.	-112	.002	.7	3.2	.0	0.	0.
DRIFT BIAS										
X	488.	-891.	671.	-14	.000	.1	-1.7	.0	-0.	-0.
Y	-756.	-3397.	-31.	15	-.004	-1.9	.1	.0	0.	0.
Z	150.	410.	-60.	-11	.001	.3	.3	.0	-0.	-0.
0-SENS 1A DRIFT										
X	280.	-512.	877.	-12	.000	.1	-2.3	.0	-0.	-0.
Y	269.	323.	-5.	-12	.001	.3	.0	.0	-0.	-0.
Z	186.	1303.	-73.	-11	.002	.7	.4	.0	-0.	-0.
0-SENS 5A DRIFT										
X	95.	-149.	-93.	-11	.000	.0	.3	.0	-0.	-0.
Y	-1021.	-7140.	-55.	.5	-.008	-3.7	.1	.0	-0.	-0.
Z	291.	102.	-99.	-.2	.001	.3	.6	.0	0.	0.
0-SENS 0A DRIFT										
X	1288.	-2306.	1390.	-1.1	.001	.3	-3.1	.0	-0.	-0.
Y	-1496.	-4027.	-35.	1.0	-.006	-2.8	.1	.0	0.	-0.
Z	-46.	135.	19.	.0	.000	.0	-.1	.0	-0.	-0.
0-SQ SEN DRIFT										
X	-19.	63.	-231.	.0	.000	.0	.6	.0	-0.	-0.
Y	250.	-340.	-10.	-.2	.000	.1	.0	.0	-0.	-0.
Z	171.	418.	-89.	-.1	.001	.4	.4	.0	0.	0.
ACCEL BIAS										
X	110.	11473.	-74.	5.3	.040	17.9	.1	.0	-14.	-14.
Y	-776.	975.	875.	.7	-.002	-1.1	-2.2	.0	-6.	-6.
Z	-10260.	10845.	-47.	11.9	-.016	-7.1	.1	.0	-83.	-83.
ACCEL SCALE FAC										
X	-1258.	6793.	-23.	1.1	.002	1.1	.0	.0	-0.	-0.
Y	-43.	78.	129.	.0	-.000	-0	-.1	.0	-0.	-0.
Z	-9777.	17795.	-82.	8.4	-.005	-2.3	.2	.0	1.	1.
ACCEL 1A ALINE										
- OA										
X	511.	-739.	0.	-.4	.001	.3	.0	.0	0.	0.
Y	-1273.	1835.	1679.	1.1	-.001	-.5	-4.9	.0	0.	0.
Z	-7440.	15225.	-62.	6.5	-.003	-1.2	.2	.0	-1.	-1.

TABLE X-A

RSS DATA AT NOMINAL CIRCULARIZATION + 50 SEC
(CONTINUED)

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSSRANGE RATE-FPS	TIME SEC	WEIGHT LB	OMS PROP LB
ACCEL IA ALINE										
- SA										
X	-1544.	18300.	19.	2.0	.011	5.1	-.1	.0	-1.	-1.
Y	-486.	598.	237.	.4	-.000	-.1	-2.2	.0	0.	0.
Z	-897.	1021.	-24.	.8	-.001	-.4	.0	.0	0.	0.
CO										
X	12.	24.	1.	-.0	.000	.0	.0	.0	-0.	-0.
Y	-20.	-143.	-2.	.0	.000	.0	.0	.0	0.	0.
Z	126.	-1621.	128.	-.1	.000	.0	-.2	.0	6.	6.
PERFORMANCE										
WED ACT	-123.	-96782.	77.	-.0	.000	.2	-.2	.0	2.	2.
S ISP	107.	-22006.	-239.	-.1	.000	.1	.3	.0	-6.	-6.
S PROP	-11.	-5960.	-36.	.0	.000	.0	.1	.0	-2.	-2.
S INERT	-28.	-5099.	-41.	.0	.000	.0	.1	.0	-2.	-2.
O THRST	85.	-70519.	-318.	-.1	.000	.1	.5	.0	-9.	-9.
O ISP	74.	11085.	-288.	-.1	-.000	-.0	.5	.0	-7.	-7.
O INERT	-30.	-925.	-14.	.0	.000	.0	.0	.0	153.	-4.
ET INERT	34.	-1146.	-1.	-.0	.000	.0	.0	.0	0.	0.
ET PROP	39.	42491.	92.	-.1	-.000	-.1	-.1	.0	5.	5.
VENT	-1858.	1807.	-134.	1.6	.000	.0	.1	.0	8.	8.
ATMOSPHERE										
COLD	-6.	11554.	8.	-.0	-.000	-.0	.0	.0	1.	1.
RSS	18762.	136035.	8423.	18.5	.051	22.7	24.2	.0	177.	86.

TABLE X-B
COVARIANCE MATRIX
AT NOMINAL CIRCULARIZATION + 50 SEC

	U ACT	V ACT	W ACT	U-DOT ACT	V-DOT ACT	W-DOT ACT	U NAV
U ACT	3.9110777+07						
V ACT	-5.2509822+07	2.0561616+09					
W ACT	-1.3557012+06	4.9906346+06	7.8824764+06				
U-DOT ACT	8.2053393+04	-2.3706552+06	-5.9832822+03	2.7909930+03			
V-DOT ACT	-3.6384016+04	6.4547593+04	1.1217590+03	-8.3508979+01	3.8039722+01		
W-DOT ACT	4.3450969+03	-1.0580204+04	-2.2472925+04	1.2578297+01	-3.6795524+00	6.5074541+01	
U NAV	-5.0176681+07	6.5444906+07	1.4606739+06	-1.1838244+05	4.5280903+04	-4.4776763+03	7.7728953+07
V NAV	6.6014919+07	-1.9934315+08	-2.4190665+06	2.1694615+05	-7.7627055+04	8.0637235+03	-9.2300730+07
W NAV	1.4052885+06	-2.8220246+06	-0.4550329+06	3.2357207+03	-1.2089321+03	2.3975685+04	-1.3812700+08
U-DOT NAV	-9.7532859+04	2.0954141+05	2.8943185+03	-2.8350845+02	9.8510123+01	-9.6639203+00	1.4908414+05
V-DOT NAV	4.6167601+04	-7.2244750+04	-1.2133276+03	1.1083083+02	-4.6016834+01	3.8028452+00	-6.9446965+04
W-DOT NAV	-4.3267871+03	8.8732821+03	2.2273007+04	-1.0271105+01	3.7085073+00	-6.4626098+01	4.2560448+03
WT	9.1887449+04	-1.2680345+05	4.8638883+02	1.8532009+02	-1.1539201+02	-5.7958568-01	-1.7610400+05
	V NAV	W NAV	U-DOT NAV	V-DOT NAV	W-DOT NAV	WT	
V NAV	2.4596449+08						
W NAV	2.5918542+06	1.3079086+07					
U-DOT NAV	-2.7057790+05	-2.9880787+03	3.5346086+02				
V-DOT NAV	1.0112901+05	1.1890149+03	-1.4394906+02	6.6560124+01			
W-DOT NAV	-8.1165021+03	-2.2257080+04	9.4034357+00	-3.6532151+00	6.4868283+01		
WT	3.2065139+05	3.9033066+02	-4.0886020+02	1.9003160+02	6.9750823-01	3.4885703+03	

TABLE XI
EXCHANGE RATIOS AT NOMINAL MECO

Parameter Varied	Δ ET Propellant/ Δ Parameter	
SRB Web Action Time (constant ISP)	-982.	lb/%
SRB Vacuum ISP (constant \dot{W})	2482.	lb/%
SRB Propellant Loading	1614.	lb/%
SRB Inert Weight	-.10	lb/lb
Orbiter Thrust (constant ISP)	.06	lb/lb*
Orbiter ISP (constant \dot{W})	1124.	lb/sec**
Orbiter Inert Weight	-.93	lb/lb
External Tank Inert Weight	-.93	lb/lb
External Tank Propellant Loading	.07	lb/lb

* Exchange ratio based on total system variation (lb/3 eng).

**Exchange ratio based on total system ISP variation (sec/3 eng).

TABLE XII RSS SUMMARY DATA (ACTUAL PERTURBED STATE - NOMINAL STATE)

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSS RANGE RATE-FPS	TIME SEC	WEIGHT LB	SSME PROP LB	OMS PROP LB
SRB SEPARATION	2236.	6843.	5234.	83.5	.180	38.5	23.1	5.8	19754.	19550.	-
MECO	1930.	49986.	4958.	6.8	.022	9.8	25.7	5.2	5316.	5321.	-
NOMINAL MECO + 30 SEC	2551.	131380.	5711.	7.0	.022	9.7	25.5	.0	159.	-	0.
INSERTION	3187.	57352.	8410.	7.7	.021	9.4	24.6	5.4	370.	-	20.
NOMINAL INSERTION + 150 SEC	4746.	132075.	11930.	8.6	.020	9.0	22.4	.0	158.	-	20.
CIRCULARIZATION	18453.	97403.	9348.	18.4	.051	22.6	23.7	5.8	177.	-	86.
NOMINAL CIRCULARIZATION + 50 SEC	18762.	136035.	8423.	18.5	.051	22.7	24.2	.0	177.	-	86.

NOTE: These dispersions are indicative of simulated 3 σ uncertainties.

TABLE XIII RSS SUMMARY DATA (PERTURBED NAVIGATED STATE - ACTUAL PERTURBED STATE)

	ALTITUDE FT	DOWNRANGE FT	CROSSRANGE FT	VELOCITY FPS	FLIGHT-PATH ANGLE-DEG	ALTITUDE RATE-FPS	CROSS RANGE RATE-FPS	TIME SEC	WEIGHT LB	SSME PROP LB	OMS PROP LB
SRB SEPARATION	80.	166.	207.	2.1	.028	1.6	4.1	5.8	19754.	19550.	-
MECO	1930.	2240.	4961.	6.7	.022	9.8	25.8	5.2	5316.	5321.	-
NOMINAL MECO + 30 SEC	2208.	2454.	5717.	7.0	.022	9.6	25.6	.0	159.	-	0.
INSERTION	3203.	3418.	8432.	7.7	.021	9.4	24.7	5.4	370.	-	20.
NOMINAL INSERTION + 150 SEC	4514.	5049.	11979.	8.7	.021	9.3	22.6	.0	158.	-	20.
CIRCULARIZATION	25962.	45548.	11575.	24.0	.051	22.5	23.7	5.8	177.	-	86.
NOMINAL CIRCULARIZATION + 50 SEC	26449.	47050.	10850.	24.5	.051	22.6	24.2	.0	177.	-	86.

NOTE: These dispersions are indicative of simulated 3σ uncertainties.

TABLE XIV

PRINCIPAL ERROR CONTRIBUTORS TO COVARIANCE MATRIX AT MECO

State Vector Component*	Principal Error Source
u	Platform misalignment (tilt), and accelerometer input axis misalignment toward spin axis (X).
v	Web action time, orbiter thrust and external tank propellant loading.
w	Platform misalignment (azimuth and roll) and accelerometer input axis misalignment toward output axis (Y).
u	Web action time, orbiter thrust, and external tank propellant loading.
v	Platform misalignment (tilt), accelerometer bias (Z), accelerometer scale factor (Z) and accelerometer input axis misalignment toward output axis (Z).
w	Platform misalignment (azimuth).

*Both the actual and navigated state vectors.

TABLE XV

PRINCIPAL ERROR CONTRIBUTIONS TO COVARIANCE MATRIX
AT CIRCULARIZATION

State Vector Component*	Principal Error Source
u	Platform misalignment (tilt), accelerometer bias (Z), accelerometer scale factor (Z) and accelerometer input axis misalignment toward output axis (Z).
v	Accelerometer bias (X,Z), accelerometer scale factor (Z), accelerometer input axis misalignment toward spin axis (X), web action time, orbiter thrust, and external tank propellant loading.
w	Platform misalignment (azimuth).
u	Accelerometer bias (Z), accelerometer scale factor (Z), web action time, and orbital thrust.
v	Platform misalignment (tilt), accelerometer bias (Z), accelerometer scale factor (Z) and accelerometer input axis misalignment toward output axis (Z).
w	Platform misalignment (azimuth).

*Both the actual and navigated state vectors.